

PRICKLEDON MILL, HOLMFIRTH,

Ecological Impact Assessment Report (EcIA)

November 2024



Report Control Sheet

Project Name: Prickledon Mill, Homfirth
Project Reference: CW20-180
Report Title: Ecological Impact Assessment
Report Reference: CW20-180 RPT 004
Printing Instructions: Print at A4 Portrait, Double Sided.

<i>Rev</i>	<i>Date</i>	<i>Description</i>	<i>Prepared</i>	<i>Reviewed</i>	<i>Approved</i>
/	05/11/2024	Draft report sent to Client for comment.	KBrewer	OC	OC

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CONTENTS

INTRODUCTION	5
1.1 SCOPE & PURPOSE	5
1.2. LOCATION	5
1.3. OBJECTIVES.....	5
1.4. PLANNING POLICY.....	6
<i>National Level</i>	6
<i>Local Level</i>	6
1.5. BIODIVERSITY ACTION PLANS	7
<i>National Level</i>	7
<i>Local Level</i>	7
2. METHODOLOGY	8
2.1. ECOLOGICAL IMPACT ASSESSMENT.....	8
2.2. ZONE OF INFLUENCE	8
2.3. LIKELY SIGNIFICANT IMPACTS	9
2.4. VEGETATION AND HABITAT ASSESSMENT	9
2.5. WATER VOLE SURVEY.....	9
2.6. OTTER FIELD SURVEY	10
2.7. REPTILE SURVEY	10
2.8. GREAT CRESTED NEWT AND WHITE CLAWED CRAYFISH.....	11
2.9. NOCTURNAL BAT SURVEY	11
2.10. SURVEY LIMITATIONS	12
3. BASELINE ECOLOGICAL CONDITIONS	13
4. EMBEDDED MITIGATION	18
5. ASSESSMENT OF IMPACT AND PROPOSED MITIGATION	19
5.1. GENERAL POLLUTION CONTROL MEASURES	19
5.2. GENERAL LIGHTING CONTROL MEASURES	20
5.3. HABITATS	20
5.4. OTTER AND WATERVOLE	21
5.5. INVERTEBRATES	21
5.6. BADGERS.....	22
5.7. AMPHIBIANS	22
5.7. BAT ACTIVITY	23
5.8. BAT ROOSTING.....	24
5.9. BIRDS	25
5.10. EUROPEAN HEDGEHOG	25
5.11. SUMMARY	25
6. CONCLUSION	27
6.1. LEGISLATION	27
6.2. PLANNING POLICY.....	27
6.3. CONCLUSION	27
7. BIBLIOGRAPHY	28
8. APPENDIX	29
DRAFT LIGHTING STRATEGY	29
<i>Potential Impacts</i>	29

INTRODUCTION

1.1 SCOPE & PURPOSE

1.1.1. Collington Winter Environmental Ltd was commissioned by Elliston Homes Ltd to produce an Ecological Impact Assessment (EclA) of the site at Prickledon Mill, Holmfirth, West Yorkshire HD9 2JU. This report has been prepared to inform full planning application at the site

1.1.2. The author of this report is Katie Brewer BSc (Hons), Consultant Ecologist. This report is overseen by Olivia Collington BSc (Hons), MEnvSc, CEnv Director at Collington Winter Environmental Ltd. Olivia is highly experienced managing schemes and has produced many ecological reports to inform planning management plans.

1.2. LOCATION

1.2.1. Please refer to Figure 1.1 for the site location. The site is located in Holmfirth, a town in the Metropolitan Borough of Kirklees, West Kirklees.



Figure 1.1 Site Location

1.3. OBJECTIVES

1.3.1. The purpose of the EclA is as follows:

- Determine the importance of ecological features affected, through survey and/or research and with reference to available contextual information.
- Assess impacts potentially affecting important features.
- Characterise the impacts, e.g. extent, magnitude, duration, reversibility, timing and frequency.
- Identify cumulative impacts.
- Identify significant effects of impacts in the absence of any mitigation.

1.3.2. The purpose of the surveys was to provide information regarding the following:

- The value of the wall on site for roosting bats.
- The value of trees on site for roosting bats.

- Presence/ absence of water voles and otter.
- The site usage of badger
- Presence/ absence of reptiles
- The value of the site for common and possible notable amphibians.

1.4. PLANNING POLICY

National Level

1.4.1. The National Planning Policy Framework (NPPF) (2021) sets-out national planning policy, including policies of relevance to conserving and enhancing the natural environment. Policies of relevance to the proposed development have been summarised below:

1.4.2. “**179.** *To protect and enhance biodiversity and geodiversity, plans should:*

(a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity 61 ; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation 62 ; and

(b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

1.4.3. **180.** *When determining planning applications, local planning authorities should apply the following principles:*

(a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

(b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

(c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons 63 and a suitable compensation strategy exists; and

(d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

1.4.4. **182.** *The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.”*

Local Level

1.4.5. The West Yorkshire Climate and Environment Plan (2021 – 2024). States “Across West Yorkshire investment and action is underway to tackle the climate emergency, restore and enhance nature, be ready for a changing climate and create sustainable communities and businesses. The West Yorkshire Combined Authority and its partner councils are delivering projects and initiatives across the themes of this Plan, complementing local authority plans and action to address the climate and environment emergency.”

1.4.6. The following further policies should be considered within this application:

- LE02 Environment and Energy Management
- CC06 Innovation for Net Zero, Nature Recovery and Climate Ready
- NE01 Local Nature Recovery Strategy and Biodiversity Net Gain

1.5. BIODIVERSITY ACTION PLANS

National Level

- 1.5.1. Section 41 (S41) of the NERC Act 2006 requires the Secretary of State to publish a list of habitats and species which are of principle importance for the conservation of biodiversity in England when carrying out their normal functions. Habitats and species included on the S41 list are those found in England which were identified as requiring action under the former UK BAP.
- 1.5.2. DEFRA/Natural England's S41 list explanatory note identifies the habitats and their associated species to focus action on, with the 'Land Use Planning' sector (aimed at Local Planning Authorities and RDAs with regard to their development control and planning casework) being of relevance in this case. The UK BAP is now focused at a country-level rather than at UK-level and was succeeded by the UK Post-2010 Biodiversity Framework in July 2012. For England, priority habitats and species are now covered in section 41 of NERC Act 2006.
- 1.5.3. The NERC uses the UKBAP list of priority species and habitats as an important reference source; the list has been used to draw up the NERC species and habitats of principal importance in England. The list will be the focus for conservation action across the UK over the next decade and therefore "UK priority Habitats" still acts as an important reference.

Local Level

- 1.5.4. The West Yorkshire Climate and Environment Plan 2021-2024

2. METHODOLOGY

2.1. ECOLOGICAL IMPACT ASSESSMENT

2.1.1. The EclA is based on the standard best practice methodology provided by the Guidelines for Ecological Impact Assessment (CIEEM, 2018). The assessment identifies important sites, habitats, species and other ecological features that are of conservation value based on factors such as legal protection, statutory or local site designations such as Sites of Special Scientific Interest (SSSI) or Local Wildlife Sites (LWS) or inclusion on Red Data Book Lists or Local Biodiversity Action Plans. The importance of an ecological feature is considered within a defined geographical context.

2.1.2. The following frame of reference is used, or adapted to suit local circumstances:

- International and European
- National
- Regional
- Metropolitan, County, vice-county or other local authority-wide area
- Local
- Negligible (below Local level e.g. site level)

2.1.3. Consideration of impacts at all scales is important, and essential if objectives for net gain of biodiversity and maintenance of healthy ecosystems are to be achieved. In identifying impacts, the review considers the Client's site proposals and any subsequent recommendations made are proportionate / appropriate to the site and have considered the Mitigation Hierarchy as identified below:

- **Avoid:** Provide advice on how the development may proceed by avoiding impacts to any species or sites by either consideration of site design or identification of an alternative option.
- **Mitigate:** Where avoidance cannot be implemented, mitigation proposals are put forward to minimise impacts to species or sites as a result of the proposals. Mitigation put forward is proportionate to the site.
- **Compensate:** Where avoidance cannot be achieved any mitigation strategy will consider the requirements for site compensatory measures.
- **Enhance:** The assessment refers to planning policy guidance to relate the ecological value of the site and identify appropriate and proportionate ecological enhancement in line with both national and local policy.

2.2. ZONE OF INFLUENCE

2.2.1. To define the total extent of the study area for this assessment, the proposed scheme was reviewed to establish the spatial scale at which ecological features could be affected. The appropriate survey radii for the various elements of the assessment (i.e. desktop study, field survey and species-specific surveys) have been defined in the relevant sections below. These distances are determined based on the professional judgement of the ecologist leading the appraisal, taking into account the characteristics of the site subject to assessment, its surroundings and the nature of the proposals.

2.3. LIKELY SIGNIFICANT IMPACTS

2.3.1. For the purpose of this EclA, a 'Likely Significant Effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' (explained in 3.1) or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects are considered significant at the range of scales from international to local.

2.3.2. A Likely Significant Effect is an effect that is sufficiently important to require assessment and reporting so that the ecological consequences of the project are understood. In broad terms, Likely Significant Effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution). Note: The following definitions are used for the terms 'impact' and 'effect' throughout this report:

- Impact – Actions resulting in changes to an ecological feature.
- Effect – Outcome to an ecological feature from an impact.

2.4. VEGETATION AND HABITAT ASSESSMENT

2.4.1. A Phase 1 Habitat Survey was carried out by Brindle and Green (BG20.316, January 2021). A subsequent Ecological Impact Assessment (EclA) has also been undertaken (BG21.169.3, September 2021). For the baseline the habitats were mapped using the previous Phase 1 map and condition assessed using the descriptions outlined within the report. The Phase 1 habitats were translated into the UKHab classification system.

2.4.2. An updated walkover of the site was undertaken by Collington Winter Environmental in May 2023 to complete an updated habitat condition assessments for a Biodiversity Net Gain Assessment and protected species surveys during the active months of 2023. The results of the protected species surveys and Biodiversity Net Gain Assessment are included within this report.

2.4.3. The walkover survey was undertaken broadly in line with standard UK HAB Methodology, Version 2 (2023). The assessment is undertaken with consideration of methodology as per "Preliminary Ecological Appraisal" (CIEEM, 2018).

2.4.4. A UK HAB Plan has been produced and is presented in the Appendix of this report. Standard methodology has been used, though adjustments have been made based on judgement to demonstrate habitats in a clearer manner, or where standard guidance does not fit the conditions found on site.

2.5. WATER VOLE SURVEY

2.5.1. The objectives of the water vole survey are:

- Confirm the presence of water voles within the site boundaries;
- Determine, if present, the relative densities of water voles within the site boundaries;
- Identify sections of the riverbank where water vole burrows were present (or were considered likely to be present) or were considered likely to be absent;
- Determine the most appropriate approach for safeguarding water voles and their burrows during the works, including advising on ensuring compliance with the legislation, if the species are found to be present.

2.5.2. A water vole survey was undertaken on 9th June 2023 by Katie Bird, Principal Ecologist and Andrew Taylor, Graduate Ecologist at Collington Winter Environmental Ltd. The weather at the time of survey was 18°C, practically cloudy and a light breeze. There had been 48-hour dry weather prior to the survey, so confidence could be had that signs of the species had not been washed away by rain.

2.5.3. The survey was undertaken in line with guidance set out in The Water Vole Mitigation Guidelines (Dean et al, 2016). A thorough search of both bankside was undertaken. Hand searches were undertaken of dense areas of vegetation, searching for signs of water vole including latrines, burrows, runs and feeding remains. The search was extended up the bank where appropriate vegetation was located.

2.5.4. The survey also included a habitat assessment of the bankside habitats and their suitability to support the species. This included assessment of the following:

- Bank profile and suitability for burrow making
- Bank substrate
- Fluctuations in water level
- Availability of above ground nesting sites
- Vegetation cover (for both shelter and foraging)
- Shading
- Marginal vegetation present
- Evidence of recent management and any other potential disturbances.

2.5.5. The survey effort followed guidance set out in 'Box 1' of The Water Vole Mitigation Guidance (2016). Suitable bank habitat approximately 100 m upstream and downstream, where access was obtained was surveyed.

2.6. OTTER FIELD SURVEY

2.6.1. The otter survey was undertaken on the 9th June 2023 by Katie Bird, Principal Ecologist and Andrew Taylor, Graduate Ecologist at Collington Winter Environmental Ltd. The weather at the time of survey was 18°C, partially cloudy and a light breeze.

2.6.2. The otter survey was carried out in accordance with current best practice guidelines with reference to Monitoring the Otter (Life in UK Rivers 2003) and The Design Manual for Roads and Bridges; Volume 10 Section 4 Part 2 (Highways Agency, 2001). 3.3.5.2 The River Holme within the application site was searched for field signs of otter alongside bankside habitat. Signs include:

- Dung (spraints)
- Tracks (Footprint or visible paths)
- Feeding remains
- Otter slides (into water)
- Dens (that lead underground)
- Couches (temporary areas used by otters for resting, grooming) or feeding whilst on the move)

2.7. REPTILE SURVEY

2.7.1. A total of seven updated reptile surveys of the site were undertaken between June to July 2023 by Collington Winter Environmental, following the guidance as set out in Froglife Advice Sheet 10. Reptile Survey (1999) and the Herpetofauna Workers' Manual (Gent, T and Gibson, S, 1998).

2.7.2. Artificial refugia (approximately 0.5 m x 0.5 m square sheets of heavy-duty mineral roofing felt – known as 'reptile survey mats') were placed in suitable locations within suitable habitat (e.g. sunny areas adjacent denser vegetation and south facing) on the 24th of May 2023. These were left for a minimum of 10 days to 'bed-in'. A total of 25 reptile survey mats were placed within an area of 2.1ha. This exceeds the minimum density of 10 per hectare recommended in guidelines provided by Froglife, 1999.

2.7.3. Reptile survey mats are to be checked on seven subsequent occasions in suitable weather conditions (within a constant temperature range of between 10 – 24°C, rain and windy conditions are usually unsuitable, sunny spells after rain can be suitable (Froglife, 1999). Each reptile survey mat was initially inspected from a suitable distance to identify any reptiles that may be present basking on top of the reptile survey mats, without causing disturbance. The refugia were then approached and lifted to examine the ground beneath; any reptiles present were noted.

2.7.4. During each survey, other artificial debris (such as waste wood, plastic sheeting) and other naturally occurring habitat features likely to be used by reptiles (such as small logs) are to also be checked for the presence of reptiles.

2.7.5. Please refer to Table 2.1 for the survey dates, times and weather conditions.

Table 2.1 Survey Dates and Conditions for Reptiles

Date	Survey Start Time	Weather Conditions
24.05.2023	11:30	Start temp (16°C), dry, overcast.
09.06.2023	11:00	Start temp (18°C), dry, overcast, no wind
15.06.2023	19:00	Start temp (21°C), dry, no wind
26.06.2023	9:30	Start temp (19°C) dry, clear, no wind
07.07.2023	10:00	Start temp (20°C), dry, minimal cloud, minimal wind
14.07.2023	9:30	Start temp (16°C), scattered showers, overcast
21.07.2024	9:30	Start temp (13°C) dry, overcast, minimal wind.

REPTILE POPULATION ASSESSMENT

2.7.6. In order to assess the value of any given reptile population, two assessment methodologies may be applied. Nationally, the guidelines for the selection of Sites of Special Scientific Interest (JNCC, 1989) provide criteria for identifying nationally important populations of reptiles. The methodology developed by Froglife (1999) used in the identification of Key Reptile Sites can be used to evaluate reptile populations at a local or regional level.

2.7.7. To qualify as a Key Reptile Site, a site must meet at least one of the following criteria:

- Support three or more reptile species;
- Support two snake species;
- Supports an exceptional population (see Table 2.2) of one species;
- Support an assemblage of species scoring at least 4 (see Table 2.2);
- Does not meet any previous criteria but is of particular regional importance due to local rarity.

Table 2.2 Population Assessment Table

Species	Low	Medium	High
Adder (<i>Vipera berus</i>)	<5	5-10	>10
Grass snake (<i>Natrix Helvetica</i>)	<5	5-10	>10
Common lizard (<i>Zootoca vivipara</i>)	<5	5-20	>20
Slow-worm (<i>Anguis fragilis</i>)	<5	5-20	>20

REPTILE SURVEY LIMITATIONS

2.7.8. The survey method is designed to identify the presence or likely absence of common reptile species. There is the potential for the survey to have recorded a small sample of the populations present and if a reptile species occurs at a low density, it may have been missed.

2.8. GREAT CRESTED NEWT AND WHITE CLAWED CRAYFISH

2.8.1. Environmental DNA samples were collected on 6th June 2023 by Katie Bird who holds a Class 1 Natural England Survey Licence for great crested newts (Reference: 2017-29870-CLS-CLS). Samples were collected using testing kits provided by and analysed by Surescreen Scientifics Ltd in accordance with Best Practice Guidance relating to both great crested newt and white clawed crayfish test kits.

2.9. NOCTURNAL BAT SURVEY

2.9.1. The survey was undertaken as a dusk survey on 15th June 2023 by two qualified surveyors on the section of wall with bat roosting potential. Please refer to Figure 2.1 for locations of vantage points used during the survey.

Figure 2 Surveyor Locations



2.9.2. The surveys were undertaken in line with guidance as set out in Collins (2016). Surveyors used heterodyne handheld bat detectors. All surveyors were suitably experienced undertaking bat emergence surveys. Please refer to Table 2.3 below for details of surveyors.

Table 2.3 Details of Nocturnal Bat Survey

Date	Sunset/ Sunrise Time	Start	Finish	Surveyors	Weather Conditions
15/06/2023	21:38	21:23	23:08	VP1 – Samuel Penrhyn-Lowe VP2 – Jess Davies	Temperature: 19 Celsius Cloud cover: 0 Wind: 2 max (Beaufort scale)

2.10. SURVEY LIMITATIONS

2.10.1. It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation could ensure the completed characterisation and prediction of the natural environment.

2.10.2. A total of two ponds were located within 500m of the site which were located on private land and could not be accessed.

3. BASELINE ECOLOGICAL CONDITIONS

3.1. PREVIOUS SURVEYS

- 3.1.1. An ECIA was completed by Bridle & Green in 2021 which identified that the site was suitable to support breeding birds, bats, amphibians including great crested newt (GCN), reptiles, badgers (*Meles meles*), water vole, white-clawed crayfish and otter.
- 3.1.2. Further protected species surveys were undertaken during the active season of 2021 by Brindle & Green in 2021 which failed to identify the presence of resident populations of roosting bats, GCN, reptiles, water vole, otters or white clawed crayfish within the application boundary. However, due to the suitability of the site Precautionary Working Methods (PWM's) were still recommended. Overall, the results of the surveys included the following:
- Roosting Bat Endoscope Survey completed on a stone wall to the north of site which was assessed as negligible/low bat roosting potential. No bats were found to be roosting with no field signs observed, however not all cavities were fully inspected.
 - Great Crested Newt Survey confirmed likely absent from the onsite pond (Pond 1).
 - Reptile Survey confirmed likely absent from the site.
 - Water Vole Survey confirmed likely absent from the site.
 - Otter Survey did not identify definitive evidence of otter within the surveyed area, but evidence suggested presence of mammals. A potential otter holt was located and a camera trap was deployed in proximity to the feature which did not record evidence of the species.
 - White-clawed Crayfish Survey confirmed likely absent from the site.

3.2. DESIGNATED SITES

- 3.2.1. The site falls within the Impact Risk Zone of Dark Peak Site of Special Scientific Interest (SSSI) located approximately 3.5km west from the site. The site incorporates the former SSSIs known as Kinder and Bleaklow, Mill Clough, Ladybower Tor, Alport Castles. Part of the site is listed in 'A Nature Conservation Review'; edited by D A Ratcliffe, Cambridge University Press, 1977. This is wild, open and more or less continuous moorland, predominantly at an altitude of 400–600 m and broken only by transpennine roads from Manchester to Sheffield, over the Snake Pass; from Manchester to Barnsley along the Longdendale valley and over the Woodhead Pass and from Oldham to Huddersfield over Wessenden Head Moor. The Peak District moorlands overlie the grits, shales, sandstones and mudstones of the Millstone Grit series. The vast blanket mires of the Dark Peak plateaux support nationally important breeding populations of golden plover (*Pluvialis apricaria*) (1.7% of the British population) and dunlin (*Calidris alpina*) (0.9% of the British population) as well as very significant numbers of meadow pipit (*Anthus pratensis*), the most common passerine throughout the area. The south Pennine population of breeding twite is probably of international significance. Not only is it the most southern population in Britain, but it is also isolated from other populations in Scotland, Ireland and Scandinavia which are themselves disjunct from those birds occupying the mountains of Central Asia. **Due to the proposed scheme at the site, a consultation with Natural England is not required based on consultation with Magic.gov.uk.**
- 3.2.2. The site is connected to habitats within the local area via the River Holme however, it is not directly connected to any designated sites.

3.3. HABITATS

- 3.3.1. A habitat baseline assessment was undertaken by Collington Winter in 2023 which included a walk over of the site and habitat condition assessments.
- 3.3.2. The site consisted of unmanaged habitats which includes the following:
- Developed Land; Sealed Surface
 - Ornamental Lake or Pond
 - Other Neutral Grassland
 - Open Mosaic on Previously Developed Land
 - Broadleaved Woodland
 - Mixed Scrub
 - Running Water

- 3.3.3. A habitat baseline assessment was undertaken by Collington Winter Environmental 2023 as part of the Biodiversity

Net Gain Assessment. See the Biodiversity and River Metric Assessment report for further detailed (Reference: CW20-810 RPT 001).

3.4. NON-NATIVE INVASIVE SPECIES

- 3.4.1. During the walkover completed by Birtle & Green 2021, invasive flora species were identified within the site boundary. Indian balsam (*Impatiens glandulifera*) and Japanese knotweed (*Fallopia japonica*) were colonised along the riverbank. It is understood that there have been no works to remove the invasive weed species.

3.5. INVERTEBRATES

- 3.5.1. The habitats on site including the pond and River Holme, are anticipated to be of value for local invertebrate populations providing a variety of foraging resources and linear features connecting to the site. It is anticipated that these habitats will also provide breeding resources for invertebrate populations.
- 3.5.2. Overall, notable invertebrates may utilise the site for breeding within adjacent River Holme and the pond. They could also use some habitats on site for foraging purposes.

3.6. WATERVOLE SURVEY

- 3.6.1. The zone of influence was considered to be the section of the River Holme and Pond 1 extending throughout the site, as well as downstream habitats. No evidence for this species was identified on site, and no evidence of the species was observed in 2021.
- 3.6.2. The River Holme bankside habitat was considered to be sub-optimal due to comprising built up brick work with no suitable opportunities for burrow making. And where the natural bankside habitat comprised bare-earth with limited aquatic vegetation (scattered patches of drooping sedge), to provide cover or foraging resources, though was partially abundant with ephemeral bankside vegetation. In addition, it is anticipated that the River Holme will be subject to varying water levels and was considered to be moderately fast flowing, limiting the likelihood of water vole presence.
- 3.6.3. It should be noted that recent bankside construction had been completed on the southern western aspect of the site, relating to a separate residential development where a culvert had been installed and structural boulders/stones making up the bankside habitat.
- 3.6.4. The species were also found to be absent from Pond 1.
- 3.6.5. **Water vole are assessed as continuing to be absent from the site.**

3.7. OTTER SURVEY

- 3.7.1. The zone of influence was the section of the River Holme extending throughout the site and habitats upstream and downstream of the site, and Pond 1. The bank side of the River Holme within the site and extending from the site was suitable for supporting holts or couches for this species, however suitability is present in the wider environment, associated with the river corridor. No suitable features for the species were considered present relating to Pond 1.
- 3.7.2. A search of the River Holme and bankside habitat of the River Holme and Pond 1 failed to identify definitive evidence of otter (such as spraint or feeding remains) within the survey area, however numerous potential features were identified as detailed within Table 3.1. **It is deemed likely that otter will utilise the River Holme and Pond 1 for commuting and foraging purposes, with a potential holt identified on the northern aspect of the River Holme.**

Table 3.1 Photographs of Otter Survey Features

Description and Location	Photographs
<p><u>Potential otter holt identified in 2021</u></p> <p>The previous potential otter holt identified in 2021 was re-surveyed and was found to no longer exist. It previously comprised a shallow entrance with the natural bankside on the southern aspect of the River Holme. It was mainly collapsed with extensive leaf-litter within the entrance. As such, it was not considered to be a potential otter holt.</p>	
<p><u>Potential Mammal Slide</u></p> <p>GR SE 13769 07844</p> <p>A potential mammal slide was located on the southern bank of the River Holme, where disturbance within the leaf litter indicated possible use as a mammal slide.</p>	
<p><u>Potential Otter Holt</u></p> <p>GR SE 13701 07860</p> <p>A potential otter holt was present to the north west of the site, relating to the northern bankside of the River Holme. It appeared to be a previous culvert/drainage system within the manmade brick wall and was most likely a feature of the previous mill that was onsite. It appeared to extend a few metres deep, with a dry base, with scattered vegetation covering the entrance point. It was inspected for field signs, none of which were found but it was considered a possible otter holt due to its location and condition.</p>	

3.8. AMPHIBIANS AND WHITE CLAWED CRAYFISH

- 3.8.1. The data search obtained in 2021 did not return any records of great crested newt within 1km of the site (Bridle & Green 2021). One pond is located on site and two ponds are located within 500m of the site boundary. Please refer to figure 3 for the pond locations.
- 3.8.2. The River Holme located on the southern aspect of the site was identified as providing potential value for white clawed crayfish due to habitat suitability and connectivity to further water courses which could support local populations.
- 3.8.3. P1 was subject to a Habitat Suitability Index (HSI) in 2021 which scored "Good", P2 and P3 were located on private land and could not be accessed during the survey.
- 3.8.4. P1 underwent a total of four presence/ absence surveys in 2021 completed by Bridle & Green in 2021, there were no newt species identified in P1, one common frog (*Rana temporaria*) and two common toads (*Bufo bufo*) were identified within the site boundary.

3.8.5. Environmental DNA (eDNA) for GCN samples were taken of P1 in 2023 by Katie Bird who holds a Class 1 Natural England Survey Licence for great crested newts (Reference: 2017-29870-CLS-CLS). Samples were collected using testing kits provided by and analysed by Surescreen Scientifics Ltd in accordance with Best Practice Guidance. Samples of the River Holme were also taken to for eDNA sampling for white-clawed crayfish in accordance with Best Practice Guidance.

3.8.6. Both the eDNA for GCN and white clawed crayfish were returned as **negative**. Therefore, great crested newt and white clawed crayfish are deemed likely absent from the site however, it is anticipated that common amphibians will remain present on site.

3.9. REPTILES

3.9.1. The site was found to provide suitability for reptile species in 2021 and therefore underwent a total of seven reptile surveys were undertaken between April – June 2021 by Bridle & Green. There were no reptiles identified within the site during the surveys, permanent populations were deemed absent from the site however it was noted that due to habitat connectivity individual reptiles could enter the site.

3.9.2. There were no reptiles identified during the updated reptile presence/ absence surveys completed by Collington Winter Environmental 2023. Reptiles are not anticipated to utilise the site, but individuals could be present due to habitat suitability and connectivity.

3.10. BATS (ROOSTING)

3.10.1. The stone wall located on the northern aspect of the site was found to have negligible bat roosting potential in 2021. The wall underwent an endoscope survey in 2021 by Bridle & Green in 2021 which found no evidence of roosting bats within any inspected cavities. It was noted that some cavities could not be fully investigated as they could not be reached.

3.10.2. In 2023 the stone wall was surveyed as a nocturnal bat survey in favour of endoscope analysis by Collington Winter Environmental. This is due to the inability to safely reach all crevices in the wall therefore not providing definite absence or presence of roosting bats. Bat activity was recorded sporadically throughout the survey with only common and widespread species identified by both vantage points.

3.10.3. The first bat was recorded at 22:03 (approximately 47 minutes after sunset) by both vantage points. The bat was a common pipistrelle and was heard but not seen. Both common and soprano pipistrelles were observed foraging within proximity of the stone wall and were seen commuting in a northerly and easterly direction. Bat activity ceased at both vantage points at approximately 22:50.

3.10.4. **No bat roosts were located on site during the survey.** Therefore, no further licences are required to proceed with the proposed development.

3.10.5. A total of two trees located along the southern boundary of the site were assessed as having low suitability for roosting bats (T1- SE 13709 07858 and T2 SE 13709 07858) due to cracked limbs and loose bark. It is understood that all trees in this area are to be retained post development. If any works are to be undertaken on the trees they will require further survey work before removal.

3.11. BATS (ACTIVITY)

- 3.11.1. The habitats on site are anticipated to attract invertebrate prey into the site boundary which will in return attract foraging bats into the site. The River Holme is a linear feature that is anticipated to be used by commuting bats.
- 3.11.2. The remaining habitats on site do not include linear commuting features for bats therefore, they are not anticipated to utilise this area. It is understood the trees along the river are to be retained and the river is to be enhanced and therefore the linear feature is not to be impacted.
- 3.11.3. Introduced lighting could cause a negative impact on local bat populations if not mitigation is followed.

3.12. BIRDS

- 3.12.1. The site provides some potential breeding bird habitats in relation to the individual trees/treelines, pond and scrub for passerine species. The pond onsite and the River Holme both are anticipated to provide further opportunities for local wading birds such as mallard (*Anas platyrhynchos*).
- 3.12.2. The connecting woodland habitat is anticipated to support a great variety of nesting bird species. It is understood from the proposed development that the pond and trees within the site are to be retained and therefore suitable breeding habitats are to be retained. It is anticipated that breeding birds could be impacted by the disturbance on site.

3.13. BADGERS

- 3.13.1. Habitats on site including the hedgerows and ditches were found to provide suitability for badger in 2021 by Bridle & Green. There were no badger setts identified within the site however it was noted that the site could be used by foraging and commuting badger.
- 3.13.2. There were no signs of badger identified within the site during the updated walkovers completed by Collington Winter Environmental in 2023. There were no signs of activity including mammal runs, snuffle holes and latrines were identified. Badgers were still considered absent from the site; however, it is anticipated that they could enter the site due to connectivity for commuting and foraging purposes.

3.14. EUROPEAN HEDGEHOG AND BROWN HARE

- 3.14.1. Given the habitats present within the site including scrub and the widespread nature of the species, it is anticipated that hedgehog could be present within the site, particularly within boundary habitats such as treelines.
- 3.14.2. The site is anticipated to have limited value due to a lack of expanses of agricultural fields which are the preferred habitat for the species. Brown hares are not anticipated to be present on site.

4. EMBEDDED MITIGATION

- 4.1.1. The proposed development includes the development of a large building with associated parking and bridges over the River Holme.
- 4.1.2. Where possible, habitats have been proposed for retention and enhancement in line with the mitigation hierarchy. This includes the enhancement of P1 and its riparian bank, as well as retention of trees on site.
- 4.1.3. A Biodiversity Net Gain Assessment using the Defra Statutory Biodiversity Metric was completed by Collington Winter Environmental in June 2023 which found a net loss in habitat units of -0.32 equating to -6.30%. A net gain in habitat units could not be met and therefore it is recommended that the scheme purchase credits or find off-site habitats within its ownership that could be subject to “off-site” habitat enhancement or creation.
- 4.1.4. A River Condition Assessment was completed in 2023 by Collington Winter Environmental which resulted in a net gain of 0.42% by enhancing 0.09km of the watercourse from Moderate – Fairly Good condition. This will be completed by the removal of the weir, and provision of “softer” channel re-enforcements in place of the concrete culverts that extend significantly into the watercourse. The 10% net gain has not been met and therefore it is recommended that the scheme purchase credits or find off-site habitats within its ownership that could be subject to “off-site” habitat enhancement or creation.
- 4.1.5. The proposed development has a net gain in hedgerow units of 59.77% therefore this has exceeded the 10% net gain target on site in hedgerow units.
- 4.1.6. Refer to Figure 4 for the results of Biodiversity Net Gain Calculator.

Figure 4 Biodiversity Net Gain Calculator Results

FINAL RESULTS		
Total net unit change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	Habitat units	-0.32
	Hedgerow units	0.37
	Watercourse units	0.00
Total net % change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	Habitat units	-6.30%
	Hedgerow units	59.77%
	Watercourse units	0.42%
Trading rules satisfied?	No - Check Trading Summaries ▲	

- 4.1.7. The following habitats are to be retained/ enhanced or introduced into the site:
- The proposed development includes the woodland and scattered trees to be retained and enhanced through the proposed development to meet “Moderate” habitat condition.
 - P1 is to be enhanced to achieve a “Moderate” habitat condition through the and increased native planting and the reduction of the water level.
 - An area of riparian vegetation including small willow scrub and soft rush, is present on the northern pond boundary. This area of riparian vegetation could be extended into the pond with floated pre-seeded coir mats and floating vegetated platforms, providing additional planting and expanding the depth of the riparian margin.
 - Modified grassland is to be planted into the site however this is expected to meet the “Poor” habitat condition.
 - Other Neutral Grassland is to be planted within the site and has targeted “Moderate” habitat condition.
 - Mixed Scrub (Riparian) is to be created along the banks of the River Holme.
 - A total of 21 new medium sized trees and 15 small sized trees are to be planted and are set to target “Moderate” habitat condition.
 - Native hedgerow is to be planted around the Modified Grassland planted areas. Targeting “Moderate” habitat condition.

5. ASSESSMENT OF IMPACT AND PROPOSED MITIGATION

5.1. GENERAL POLLUTION CONTROL MEASURES

- 5.1.1. A Construction and Environmental Management Plan (CEMP: Biodiversity) should be completed which will detail mitigation measures to reduce pollution incidents within the pond and watercourse.
- 5.1.2. Measures will be taken throughout the construction phase to avoid accidental pollution events, which may indirectly affect terrestrial or offsite aquatic habitats and associated fauna. Pollution prevention and control strategies will be adhered to at all times. Any accidental damage to the adjacent habitats or fuel spillages within proximity of the site and/or adjacent habitats will be reported to the site manager and the ECoW.
- 5.1.3. Net fencing will be placed along the southern boundary and surrounding the pond. Watercourses will only need to be fenced where they pass along the site boundary. This fencing will be installed to minimise debris and dust from entering the aquatic habitats which were identified to provide suitable habitat for local fauna including common amphibians and otter. The waterbodies do not connect to any further designated sites within the local area.
- 5.1.4. Installation of silt control devices will be used to catch sediment/water run-off where appropriate. Regular checks, to be completed by the site manager, this will ensure the installed silt control devices are in place and are effective. The silt control devices will be replaced, or additional devices installed, if silt run-off is evident. Site management will take a key role in ensuring silt control devices are effective to minimise the potential impacts of the construction phase on local fauna populations.
- 5.1.5. It is recommended that a 5 m buffer is to be retained from the water bodies where appropriate (in relation to the buildings). This will be supervised by the ECoW to ensure that pollution control measures are adhered to. The 5 m zone should be appropriately fenced (such as with heras fencing) and signed to ensure that there are no works completed in this area. The buffer will extend from the top of the bank and will be a no development zone. In addition, no storage or works will be allowed within this buffer. This buffer will protect waterbodies during the construction phase at the site.
- 5.1.6. There are no works to be completed on any watercourses within the site until an updated otter and water vole survey have been completed to confirm the presence/ absence of the species. Prior to works commencing.
- 5.1.7. Please refer to Figure 5.1.1 for the location of the water bodies that are to be fenced.

Figure 5.1.1: Location of Water Bodies



5.2. GENERAL LIGHTING CONTROL MEASURES

5.2.1. Lighting is to follow protocols outlined in the Institute for Lighting Engineers document “Guidance for the Reduction of Obtrusive Lighting” (2005) and BCT’s “Bats and Artificial Lighting at Night” (2023). The construction lighting may impact species on site and within the local area which are sensitive to light. Directional lighting will be achieved by angle and orientation of beam, use of a cowl, louvre or other light shield, or a combination of these. The following measures will be implemented in the final proposal lighting strategy:

- Keep lighting to minimum levels.
- Led lighting with a warm white light to be used over cool white light (<2700Kelvin).
- Lighting feature park wavelengths greater than 550nm.
- Light placement to be downward facing to prevent excess horizontal or vertical light spill.
- Avoid illuminating habitats.

5.2.2. Construction lighting is not to be directed towards retained and surrounding habitats which includes the River Holme on the southern aspect of the site and the pond located on site. Construction lighting should not be direct towards trees assessed as having bat roosting potential, until they are removed (if required). If not to be removed, the measure is to be completed throughout the construction phase.

5.2.3. The lights will not be continuously on, they will not be in use for a full night period to protect local fauna populations (i.e bats) It is recommended that the lights are to be turned off daily 30 minutes before sunset and they are not to be turned on until 30 minutes after sunrise to allow for the habitats to be dark throughout the night. This is to maintain a dark corridor along the watercourses on the boundary features of the site which are predicted to support a nocturnal community in these habitats.

5.3. HABITATS

Potential Impacts

- 5.1.1 Potential impacts associated with the construction phase may include soil compaction, plant movements, vibration and dust deposition. These actions may lead to the degradation of retained habitats, particularly along the southern aspect of the site, should no mitigation be applied.
- 5.1.2 The watercourse along the southern aspect of the site and the pond located within the site are at risk of pollution incidents, including dust deposition.
- 5.1.3 The trees within the site could be negatively impacted by the proposed development without mitigation.
- 5.1.4 There is a risk of spreading non-native invasive flora species which were identified within the site without measures to eradicate them from the site.

Mitigation Measures

- 5.1.5 It is understood that the trees within the site are to be retained as part of the proposed development. Therefore, it is recommended that tree protection measures are followed throughout the construction phase, this includes:
- Generally, the protection measures of retained trees will be through used of temporary protective demarcation fencing to protect the trees and shrubs. The fencing must extend outside the canopy of the retained trees and must remain in position until all plots have been developed to ensure protection is provided throughout the construction phase.
 - The fencing will be in accordance with BS 5837:2012 Trees in Relation to Design, Demolition and Construction: Recommendations.
- 5.1.6 The general pollution control measures detailed in Section 5.1 are to be implemented to minimise risk of pollution impacts of water features and further working methods are to be followed which are to be detailed within a CEMP: Biodiversity.
- 5.1.7 It is recommended that a non-native Invasive Flora contractor is hired to remove the invasive species from the site and prevent any further spreading within the site or adjacent habitats.

Compensation

5.3.1. The proposals at the site include the planting of trees, scrub and other neutral grassland to minimise the loss of biodiversity on site. The pond is to be retained on site which supports local flora and fauna populations, and the river is to be enhanced as a part of the development.

5.4. OTTER AND WATERVOLE

Potential Impacts

5.4.1 There was no evidence of water vole identified within the site. Potential otter holts were identified within the River Holme. Due to habitat connectivity, it is anticipated that otter will be present within the River Holme using the feature for commuting and foraging. Water vole are considered absent.

5.4.2 Potential impacts on otter relate to unmitigated lighting, pollution of the watercourse and pond, as well as impacts during construction of nearby buildings and bridges.

Mitigation Measures and Compensation

5.4.3 The pollution control measures detailed within the CEMP and Section 5.1 seek to protect the River Holme and Pond 1 from accidental pollution incidents which will conserve suitable habitats for otter and water vole.

5.4.4 To ensure that the development works result in a non-significant impact on otter, a pre-works check of the river should be undertaken prior to the works to identify any signs of usage of the previously identified otter holt, and of any new features which may have since been created. This should be implemented as part of the CEMP and will involve five days of camera trapping in the vicinity of the proposed bridge construction. Aside, from the immediate area of the bridge construction, suitable buffer zones should be incorporated along the riverbanks. These can also be specified within the CEMP.

5.4.5 Additional Working Methods relating to otter include:

- Monthly checks to be undertaken of the watercourse and pond by the site manager to check for pollution, litter or other adverse impacts on the watercourses.
- All site personnel are to be inducted through use of a toolbox talk, on the presence of otter, their legal protection and working limits.
- No works within 30 m of the watercourse or pond will be undertaken after dusk or before dawn.
- Any temporarily exposed open pipe system will be capped in such a way as to prevent water vole gaining access, as this may happen when contractors are off-site.

5.4.6 The lighting mitigation plan stated in section 5.2 and the appendix of the report will help keep the River Holme and Pond 1 and connecting habitats as a “Dark Zone” which will benefit local otter and water vole populations.

5.5. INVERTEBRATES

Potential Impacts

8.4.1 The River Holme and P1 have the potential to support breeding invertebrates in the aquatic lifecycles and the newly colonised site provides opportunities for foraging. Part of the site was found to support open mosaic habitat in 2023 which is known to be valuable for invertebrate populations.

8.4.2 The watercourse and pond are to be retained and enhanced through the proposals which is anticipated to create a betterment for local invertebrate populations.

8.4.3 The open mosaic habitat is to be lost to development.

Mitigation Measures and Compensation

- 8.4.4 The pollution control measures detailed within the CEMP and Section 5.1 seek to protect the adjacent river and onsite pond from accidental pollution incidents which will conserve potential breeding habitats for invertebrates.
- 8.4.5 The landscaping includes of fruiting and flowering flora species in relation to the other neutral grassland and native scrub which will allow for the continuity of foraging resources on site. The planting of scrub and new trees with also allow for sheltering and overwintering opportunities, as were present on-site pre-clearance.

5.6. BADGERS

Potential Impacts

- 8.5.1 There were no signs of badger identified within the site in 2021 and 2023 however as the site is connected to adjacent habitats and it is anticipated that badger will be present within the local area. Commuting and foraging badger could be present onsite.
- 8.5.2 There is a risk of direct harm to individuals due to the presence of fencing, pits, compounds and storage facilities. This has the potential to result injuring or killing an individual and a breach of Protection of Badgers Act 1992.

Mitigation Measures

- 8.5.3 The following Precautionary Working Methods (PWMs) will be adhered to during proposed construction phasing (if the further surveys find no badger to be present) to ensure that no badgers are impacted by the proposed development (Badger Trust, 2023):
- A pre-commencement of work badger survey will be conducted by a suitably qualified ecologist to ensure the current badger situation is known and that the recommendations are correct.
 - All site personnel will be fully briefed concerning the method statement, the presence of badgers, the mitigation measures to be followed, the relevant legislation, the penalties imposed and who to contact should they need to.
 - Trees and shrubs will be felled so that they fall away from the direction of a sett and outside exclusion zones.
 - Ensure excavations or trenches left overnight are covered or have an escape route such as a shallow gradient at one or both ends.
 - Ensure excavations or trenches are inspected each morning and evening to ensure no badgers have become trapped.
 - Open pipework with a diameter of more than 120mm should be properly covered or capped at the end of the working day to prevent badgers from entering and becoming trapped.
 - During the work, the storage of any chemicals will be contained in such a way that they cannot be accessed or knocked over by any roaming badgers.
 - The storage of topsoil or other “soft” building materials within the site will be given careful consideration. Badgers will readily adopt such mounds and dig setts which would then be afforded the same protection as established setts. To avoid the adoption of such mounds, they should be subject to daily inspections before work commences or alternative measures put in place, such as being fenced off for higher-risk areas.
 - Litter, tools and potentially dangerous materials on site will be cleared at the end of the working day. Care should be taken that there are no sharp metal objects or pointed protrusions on the ground which could seriously injure a badger due to their poor eyesight.
 - Ensure no dogs are brought to the work site.
 - Security lighting will be kept to a minimum and away from setts to avoid disturbance to any badgers on site.
 - Fires should be lit only in secure compounds away from areas of badger activity and should be fully extinguished at the end of the working day.
 - Use of noisy plant or machinery will cease at least two hours before sunset and not commence until an hour after sunrise to avoid causing a disturbance to badgers or preventing access or egress to setts.
 - Badger paths must not be blocked to ensure access to foraging areas is maintained.
- 8.5.4 During site inductions, all contractors will be briefed on how to identify badger setts; and given the confidence to cease works and contact an ecologist if they believe any setts have been located on site.

5.7. AMPHIBIANS

Potential Impacts

- 8.6.1 Great crested newts have been discounted from assessment although, common amphibians such as common

toad and frog are present on site.

8.6.2 There is a risk of killing and/or injuring individuals and breaching relevant legislation.

Mitigation Measures

8.6.3 Consideration of amphibian presence during habitat removal will be undertaken. Any debris is to be cleared by hand, and any common amphibians located moved carefully, by hand, to outside of the impacted area.

8.6.4 Storage of materials/waste will be undertaken on areas of hard standing or bare ground. Waste will be stored in skips or removed off site as soon as possible to avoid creating refuges which could be utilised by amphibians. Mounds of soil are to be compacted around the base to avoid creating refuges which amphibians could utilise.

8.6.5 Site working will avoid the creation of temporary waterbodies which may be attractive to amphibians. For this purpose, excavations will be backfilled as soon as possible following creation or fitted with ramps to allow a means of escape. A check for the presence of amphibians will be undertaken before excavations are infilled.

Compensation Measures

8.6.6 P1 is to be retained and enhanced as part of the proposed development. This area should be a receptor area for any common amphibians identified on site. It should be noted that any amphibians identified on land should not be placed into the water body and only within the adjacent habitats of the pond.

5.7 BAT ACTIVITY

Potential Impacts

5.7.1 The proposed works do not include the loss of linear features for commuting bats. P1 and the River Holme are to be retained as a part of the proposed works which are anticipated to provide food resources to support local bat populations.

5.7.2 Slow-flying species such as brown long-eared bat, are known within the local area and are sensitive to lighting, increase of light pollution during the operational phase will lead to the potential fragmentation of commuting paths and decrease in foraging activity. This has the potential to result in a temporary negative impact on bat activity within the local area, should no mitigation be applied.

Mitigation Measures

5.7.1. Any proposed lighting/existing lighting should follow the guidance outlined in the Institute for Lighting Engineers document "Guidance for the Reduction of Obtrusive Lighting" (2005) and BCT's "Bats and Artificial Lighting at Night" (2023).

5.7.2. An External Lighting Scheme had not been produced on the writing of this report. As such, the following recommendations are to be considered within the scheme during its condition, to minimise impacts of lighting. The recommendations are as follows:

- Keep site lighting to minimum levels.
- Luminaries should lack UV elements and preferably LED lighting with a warm white light should be used over cool white light (ideally <2700Kelvin).
- Lighting should feature peak wavelengths greater than 550nm.
- Light placement should be downward facing to prevent excess horizontal or vertical light spill.
- The use of integrated fittings such as cowls, shields, louvres and hoods, that effectively contain light spill from unintended areas.
- The use of hard landscaping features to block light and create dark corridors.
- Avoid illuminating habitats of value.
- Use of timed security lights should be set on motion-sensors and using short, 1-minute timers, to minimise light use.
- Column heights of lighting can be considered to minimise light spill.

5.7.3. A draft lighting mitigation strategy is included within the Appendix of this report.

5.8 BAT ROOSTING

Potential Impacts

5.8.1 The loss of trees suitable for roosting bats has the potential to injure or kill bats which would cause an offence under Conservation of Habitats and Species Regulations 2010 and amendments and Schedule 5 of the Wildlife and Countryside Act 1981 (If required).

Mitigation Measures

5.8.2 Aerial tree inspection to be completed on T1 and T2 which provide low bat roosting potential and require further investigation (if tree is to be removed). If there are no field signs of bats such as droppings or live individuals identified there are no further roost categorisation surveys required or EPS licencing. If evidence of bats is identified further surveys will be required to complete a EPS licence. For each feature lost, compensatory bat boxes should be installed within the scheme on mature retained trees. The features should be installed in advance of works and may comprise a mixture of crevice and cavity bat boxes to cater for a variety of bat species known within the local area

Compensation

5.8.3 It is understood that there are to be no works to the trees on site however, the wall which was found to provide low bat roosting potential is to be removed. It is recommended that compensatory bat boxes should be installed within the scheme on mature retained trees. The features should be installed in advance of works and may comprise a mixture of crevice and cavity bat boxes to cater for a variety of bat species known within the local area. Examples are outlined within Table 5.8.1.

Table 5.8.1 Bat Box Specifications suitable for the development

	Specification	Externally mounted or integrated?	Species Suitability	Link	Photograph
Crevice Bat Boxes	Greenwood's Ecohabitats Two Crevice Bat Box	External	Common and Soprano Pipistrelles	https://www.greenwoods-ecohabitats.co.uk/shop	
	Integrated Eco Bat Box, Crevice	Integrated		https://www.wildcare.co.uk/integrated-eco-bat-box-crevice.html	
Cavity/Void Bat Boxes	Greenwood's Ecohabitats Medium Hollow Bat Box	External	Brown Long Eared, Noctules, Myotis Sp.	https://www.greenwoods-ecohabitats.co.uk/shop	

	Integrated Eco Bat Box, Cavity	Integrated		https://www.wildcare.co.uk/integrated-eco-bat-box-cavity.html	
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5.9 BIRDS

Potential Impacts

5.9.1 The trees and adjacent habitats are anticipated to provide suitable nesting habitats to support local bird populations. The pond and River Hulme located within the site are anticipated to provide suitable habitats for wading bird species. The development has the potential to disturb nesting birds, their nests and their young. All birds, their nests, eggs and young are legally protected, with certain exceptions.

Mitigation Measures

5.9.2 Any necessary vegetation clearance and works within 15 m from any watercourse, is to be undertaken outside the main breeding bird season of March to September, inclusive. If not possible, an ecologist is to carry out a nesting bird check within 48 hours of its removal. Active nests will be protected, and a buffer marked out with appropriate fencing (such as Heras fencing), until the young have fledged. The project ecologist will determine the required buffer area based on species and the status of breeding conditions.

Compensation and Enhancement

5.9.3 A range of bird boxes should be installed throughout the site to provide some continuity of suitable nesting habitat. The boxes should target local species, particularly those listed Amber or Red on the Birds of Conservation Concern 5 (Stanbury et al, 2015).

5.10 EUROPEAN HEDGEHOG

Potential Impacts

5.10.1 The site provides suitable habitat for use by hedgehogs which is a Species of Principle Importance under the NERC Act 2006. During the proposed vegetation clearance works, there is a risk of killing or injuring an individual.

Mitigation Measures

5.10.2 During site clearance, habitats within the site are to be cleared by hand and in a directional manner to ensure no sheltering hedgehogs are impacted by the works. If hedgehogs are located, they will be carefully moved by hand to an area outside of extraction workings to suitable cover. If any injured hedgehogs are identified, they should be taken to a local vet.

Compensation

5.10.3 The landscaping includes the provision of the pond and adjacent habitats and the woodland surrounding the stream. It is recommended that hedgehog highways are incorporated into the scheme to allow for commuting through the site and adjacent habitats (located within connectivity to the adjacent habitats which are anticipated to be of value).

5.11 SUMMARY

5.11.1 Mitigation has been recommended to protect local flora and fauna populations within the site or anticipated to be within the adjacent areas of the site. Refer to table 5.12.1 for a summary of the mitigation and compensation on site.

Table 5.12.1 Summary

Ecological Feature	Mitigation/Compensation	Relevant Legislation and Planning Policy	Reports to Secure Adoption of Measure
<i>Habitats</i>	<p><i>Protection measures of retained habitats.</i></p> <p><i>Compensatory habitat creation and long-term management.</i></p> <p><i>Non-native invasive flora to be removed by a contractor.</i></p>	<i>UK BAP Priority Habitat List</i>	<i>CEMP, Landscape Masterplan, BNG</i>
<i>Invertebrates</i>	<p><i>Protection measures of retained habitats.</i></p> <p><i>Compensatory habitat and long-term management.</i></p>	<i>Importance in England as defined by Section 41 of the NERC Act 2006).</i>	<i>CEMP and Landscape Masterplan</i>
<i>Badger</i>	<i>Precautionary measures during the construction phase.</i>	<i>Protection of Badgers Act 1992.</i>	<i>CEMP</i>
<i>Common Amphibians</i>	<p><i>Considerations for common amphibians during construction works.</i></p> <p><i>Long-term management of retained habitats.</i></p>	<i>Common toad is Principal Importance in England as defined by Section 41 of the NERC Act 2006).</i>	<i>CEMP and Landscape Masterplan</i>
<i>Bats</i>	<p><i>Protection measures of retained habitats and lighting mitigation.</i></p> <p><i>Inspection of T1 and T2 prior to felling if they require removal.</i></p> <p><i>Habitat retention where possible.</i></p>	<i>The Conservation of Habitats and Species Regulations 2017 (as amended) and by UK law by the Wildlife and Countryside Act 1981 (as amended).</i>	<i>CEMP, Landscape Masterplan, External Lighting Scheme (not produced at the time of writing this report).</i>
<i>Breeding Birds</i>	<p><i>Removal of vegetation to be completed outside of the breeding bird season. If not possible, a nesting bird check required.</i></p> <p><i>Compensatory habitats and breeding opportunities recommended.</i></p>	<i>With certain exceptions, all wild birds, their nests and eggs are protected by Section 1 of the Wildlife and Countryside Act 1981 (as amended) and Bird species listed on Schedule 1 of the Act receive further protection.</i>	<i>CEMP and Landscape Masterplan</i>
<i>Hedgehog</i>	<i>Precautionary measures during vegetation removal.</i>	<i>Hedgehog are Principal Importance in England as defined by Section 41 of the NERC Act 2006).</i>	<i>CEMP</i>

6. CONCLUSION

6.1 LEGISLATION

- 6.1.1 The assessment considered the confirmed and likely presence of species within the site. The proposed scheme has addressed all legal issues with respect to ecology.
- 6.1.2 In order to allow the proposed development to proceed in accordance with relevant legislation and policy, a CEMP is to be produced which ensures fauna and flora on site is protected from harm during site clearance and the construction phase.

6.2 PLANNING POLICY

National

- 6.2.1 Implementation of the proposed impact avoidance, mitigation and compensation measures outlined in this report will minimise the potential significant negative residual impacts in the zone of influence of the proposed scheme.

Local

- 6.2.2 As in line with the West Yorkshire Climate and Environment Plan (2021 - 2024), the assessment has demonstrated that ecological surveys have been completed (including surveys for species and habitats of principal importance where appropriate) to enable a suitable assessment of the potential impact on biodiversity on and off site. Where necessary, the assessment also demonstrates how the development will protect, mitigate and / or enhance biodiversity.
- 6.2.3 The proposed development does not deliver a minimum of 10% net gain for biodiversity, as outlined in the BNG report produced by Collington Winter Environmental in 2023. Habitat units will need to compensate for as detailed in the Biodiversity Net Gain Report.

6.3 CONCLUSION

- 6.3.1 The proposed scheme with its avoidance, mitigation, compensation and enhancement proposals will minimise risk of no unlawful actions occurring during the construction phase. Post development habitats are to be included within the site to support local flora and fauna.

7. BIBLIOGRAPHY

- Bat Conservation Trust and Institute of Lighting Professionals (2023). Bats and artificial lighting at Night – Bats and the Built Environment Series.
- Badger Trust (2023). Badger Protection: Best Practice Guidelines for Developers, Ecologists and Planners (England).
- British Hedgehog Preservation Society / People’s Trust for Endangered Species (2019). Hedgehogs and Development. BHPS / PTES.
- CIEEM (2019). Guidelines for Preliminary Ecological Appraisal. CIEEM.
- Collins (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (Fourth Edition). The Bat Conservation Trust, London.
- West Yorkshire Climate and Environmental Plan 2021 – 2024. Available at: [West Yorkshire Climate and Environment Plan 2021-2040](#)
- Gent, A.H & Gibson, S.D. (2003) Herpetofauna Workers’ Manual. Joint Nature Conservation Committee, Peterborough.
- Harris S., Cresswell P., Jefferies D. (1989). Surveying Badgers. The Mammal Society.
- IEA (1995). Guidelines for Baseline Ecological Assessment. E & F Spon.
- Maddock, A. (2008). UK biodiversity action plan; priority habitat descriptions. UK Biodiversity Action Plan.
- Mathews, F., Kubasiewicz, L.M., Gurnell, J., Harrower, C.A., McDonald, R.A., and Shore, R.F. (2018). A review of the population and conservation status of British mammals.
- Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.
- Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747. Available online at <https://britishbirds.co.uk/content/status-our-bird-populations>.
- UKHab Ltd (2023) UK Habitat Classification Version 2.0. (Available online at: <https://www.ukhab.org>)

8. APPENDIX

DRAFT LIGHTING STRATEGY

- 8.1.1 A Draft Lighting Strategy has been produced to demonstrate the habitats to be maintained as 'dark zones' to minimise potential lighting impacts of the proposed development. The strategy outlines the lighting procedures to be followed. A final Lux Level Plan and Lighting Strategy is to be conditioned at the reserved matters stages:
- The Draft Lighting Strategy objectives are as follows:
 - Identification of light sensitive bat and other biodiversity features.
 - Show where external lighting should be installed
 - Demonstrate that the lighting scheme will not have a significant impact on bats and other ecology.
- 8.1.2 The final Lighting Design Strategy is to demonstrate the location of external lighting to be installed and the proposed Lux Levels. Collaborative discussion between the project ecologist, lighting professional and the local authority is to be completed at the reserved matters stage to finalise all relevant plans and documents regarding lighting and ecology. The habitats and roosts on site are to be protected to minimise lighting impacts.

Potential Impacts

- 8.1.3 As detailed above, the boundary features are of highest ecological importance and are anticipated to be of importance for foraging and commuting bat.
- 8.1.4 Poorly designed lighting may lead to the potential disturbance to local bat populations (Downs et al 3). An illuminated bat roost may result in bats either deserting the roost or become 'entombed' within it (Packman et al 2016) Whilst foraging and commuting behaviour may be affected (BCT 2018), particularly on slow-flying species (i.e., brown long-eared bats and myotis species) which are less tolerant to light. UK species have been recorded avoiding gaps that are well lit, thereby creating a barrier effect (Hale et al 2015). Green light has been shown to not only impact upon foraging bats and also migrating through Europe.
- 8.1.5 It should be acknowledged that artificial lighting has benefits for more light tolerant species (i.e., pipistrelles). Many species of night-flying insects are attracted to light, which bats will predate on.

Lighting Design

- 8.1.6 It is anticipated that the areas of highest lux levels are to be located along the proposed roads, parking and buildings. As per the guidance set out under Section 3 of Bats and Artificial Lighting in the UK (2018). The following process should be implemented:
- Step 1 — determination of bats being present within the site has been considered. No activity surveys have been completed as the site provides limited value for commuting and foraging bats however P1 and the River Hulme with associated woodland is anticipated to support local bats. as such, the mitigation is detailed as a precautionary approach.
 - Step 2 — determination the presence or potential presence of roosting bats within the site has been identified within the PEA and subsequent bat surveys. No bat roosts are located on site. Two trees were found to have bat roosting potential, these are to be retained as part of the proposed works, if these require removal further surveys will be required.
 - Step 3 — avoid lighting of key habitats and features altogether and the following document will outline the lighting protocol.
 - Step 4 — in other locations of value for bats on site, apply mitigation methods to reduce lighting to a minimum and to be detailed below.
 - Step 5 - demonstrate compliance with illuminance limits and buffers.
- 8.1.7 Potential sources of lighting which can disturb bats are not limited to, streetlights, footpath or external security lighting but will also include light spill via windows. Additionally, glare (extremely high contrast between a source of light and the surrounding darkness — linked to the intensity of a luminaire) may affect bats over a greater

distance than the target area directly illuminated by a luminaire and must also be considered on site.

- 8.1.8 The potential adverse impacts on the 'favourable conservation status' of bats within the local area has been considered. The habitats on site and adjacent, and the retained potential roosting features will require the absence of artificial illumination and glare.

Step 4

- 8.1.9 Step 4 is not possible to completed at the stage of lighting designs. However, the following luminaire specifications may be required in the final design strategy, to ensure the habitats of importance are light free:
- All luminaires are to lack UV elements when manufactured. Metal halide, fluorescent sources are not be used. LED luminaires are to be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
 - A warm white spectrum (ideally <2yoo Kelvin) should be adopted to reduce blue light component.
 - Luminaires should feature peak wavelengths higher than sso nm to avoid the component of light most disturbing to bats (Stone, 2o12).
 - Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill. (See figure located on page 9 of the Bats and Artificial Lighting in the UK, 2018).
 - Column heights are to be considered to minimise light spill. Only luminaires with an upward light
 - Ratio of o% and with good optical control are to be used and reference to the ILP Guidance for the Reduction of Obtrusive Light will be completed.
 - Luminaires will be mounted on the horizontal, i.e. no upward tilt.
- 8.1.10 Step 5 cannot be implemented at this stage of which comprises demonstrating compliance with lux limits and buffer. A lighting professional is to prepare a final lighting scheme design and lux calculations.
- 8.1.11 This is to be completed as part of the reserved matters stage of the application and the design will follow the protocols detailed. A horizontal illuminance contour plan can be prepared by a suitably experienced and competent lighting professional (member of the Chartered Institution of Building Services Engineers (CIBSE), Society of Light and Lighting (SLL), Institution of Lighting Professionals (ILP) or similar to ensure competency. The appropriate software will model the extent of light spill from proposed and existing luminaires.
- 8.1.12 Measurement criteria and lighting states used in the preparation of the illuminance contour plots. It may be necessary to conduct multiple repeats over different illumination states or other conditions specific to the site. The results may then be reported to the local planning authority in the form of a report and any remedial measures which are required in order to achieve compliance of the Design Strategy.

